MOSLER Automotive

2012 Raptor Drivetrain Description, Warrantee, and Certification Statements
2/25/2011

Durability Group Description

For the evaporative system covered in this application Mosler is utilizing the Aged Components that have been aged per General Motors' process as also employed on the 2012 Corvette Z06. Mosler's engineering analysis states that the evaporative emissions systems will be equalivalently durable in the Raptor as in the Corvette.

Evaporative/Refueling Family Description

Complete descriptions of the evaporative/refueling families and the Evaporative System Information (EvSI) can be found on page 16.

Durability Procedure Description

For the evaporative system covered in this application Mosler is utilizing the Aged Components that have been aged per General Motors' process as also employed on the 2012 Corvette Z06.

Test Group Description

The engine families and test groups are synonymous. The engine family description can be found on pages 8-15.

Emissions Data Vehicle Description

A complete description of the emissions data vehicle can be found on page 18.

Test Results

All test data used in support of this application can be found in the VERIFY system. Hard copies of the test data will be provided to CARB.

Emission Testing Waiver Statement

Based on Mosler Automotive's engineering judgment and to the best of Mosler's information and belief, all vehicles contained within engine test groups covered in this application are expected to conform with the following emissions standards for which emissions data are not provided, as allowed under 40 CFR 86.1829-01:

Mosler requests that EPA grant a waiver from the submittal requirement for PM as the vehicle design is substantially similar to the existing Chevrolet Corvette Z06s that have particulate levels significantly below the standard, and Raptor are expected to demonstrate equivalent characteristics.

These vehicles comply with all applicable Cold CO standards.

These vehicles comply with all applicable SFTP standards.

OBD Description

All emission related components and OBDII software and hardware are the OEM manufacturer's correct OEM parts for the vehicle and are properly installed and fully functional.
The OEM was issued a valid certificate of conformity covering an engine family built with these OEM components.

These vehicles are fully compliant with all emission standards and requirements applicable to this vehicle.

The vehicle has the proper OBD II systems, and the systems have been tested and verified to find faults, set codes, and illuminate the light. After sufficient prep driving, the OBD systems have been verified to set OBD readiness codes, and the systems did not display any malfunctions.

Description of Alternate-fueled Vehicles

There are no flexible or alternate fuels certified for this test group.

AECD Descriptions

A list of all auxiliary control devices installed on this test group listing sensed and controlled parameters is contained in section 09.04. A complete description of all emission control systems can be found in sections 07, and 08 of this application.

Mosler states that none of the AECDs are defeat devices.

Engine Family CC3XV07.0086

Combustion cycle	OTTO-cycle
Type of cooling	liquid-cooled
Method of aspiration	Twin Turbo
Cylinder arrangement	V – 8
Displacement (ltr)	7.0
Cylinder head design	Overhead valve/ 2 per cylinder
Power/rpm	638 hp @ 6200 rpm
Torque/rpm	553 lb-ft @4800 rpm
Idle RPM (engine at operating temperature, TR 'N', accessories off)	850 ± 100 rpm
Compression ratio	11.0:1
Air induction system	N/A
Air inlet temperature control system configuration and calibration	N/A
Air filter material	paper
Electronic control devices	integrated electronic ECM

Projected Sales

Mosler Automotive estimates total sales of the 2012 Raptor will be 100 vehicles.

Request for Certification

Consulier Industries / Mosler Automotive “Mosler” hereby requests the issuance of a Certificate of Conformity for 2012 model year engine family/evap family combination: CC3XV07.0086 / CC3XR0133880. Test data and other information have been included with this application. On the basis of these tests and information, this engine family/evap family combination is in compliance with all requirements set forth in Title 40, Part 86 of the Code of Federal Regulations.

By:

_____

J. Todd Wagner
Director of Engineering

Confidential Information

All confidential information is included in document.

2012 MY Air Resources Board Certification Review Sheet E/O#_____

Manufacturer: Consulier Industries / Mosler Automotive

Exh. Engine Family: CC3XV07.0086

Evap Family: CC3XR0133880

Exhaust Standard: LEV Vehicle Class: PC

Fuel Type: Gasoline Exh. Em. Test Fuel: EPA 61 Tier 2 Evap Test Procedure: California

Service Accumulation: Std. AMA

NMOG Test Procedure: Standard

Engine Configuration: V8 Disp: 7.0L Valve/Cyl: 2 Rated HP: 638 @ 6200rpm

Engine: Rear Drive: Rear Exh. ECS: SFI/2TWC/2HO2S(2)

2012 MY Air Resources Board Certification Review Sheet E/O#_____

CAP2000 Small Volume (18 units)

Manufacturer: Consulier (EPA Manufacturer Code: C3X)

Exh. Engine Family: C3XV07.0086

Evap Family: CC3XR0133880

Exhaust Standard: LEV Vehicle Class: PC Engine codes: 50 state

Fuel Type: Gasoline Exh. Em. Test Fuel: EPA 61 Tier 2 Evap Test Procedure: California

Service Accumulation: Std. AMA

NMOG Test Procedure: Standard

Engine Configuration: V8 Disp: 7.0L Valve/Cyl: 2 Rated HP: 638 @ 6200rpm

Engine: Mid Drive: Rear Exh. ECS: SFI/2TWC/2HO2S(2)

Engine Code: GM07 (50 State)

Vehicle Models: Carline = Raptor

Transmission: M6 (only)

ETW: 2900 pound

PAU: 10.9 Hp

Ignition ECM: GM12597121

Catalytic Converter Part Numbers: GM15263677 & GM15263678

2012 MY Certification Review Sheet **E/O#_____**

Manufacturer: Consulier Industries / Mosler Automotive (EPA Manufacturer Code: C3X)

Exhaust Engine Family: CC3XV07.0086

Evap Family: CC3XR0133880

Projected Emissions
Gram/mile, except gram/test for d+HS and Gram/Gallon for ORVR

See Emissions Test Results Appendix for a listing of every test vehicle, test parameter, test result, DF, projected emission, and applicable standard.

Remarks: One configuration is being certified

STATEMENT

Mosler states that all fuels and lubricants used for test vehicles comply with applicable federal and California regulations.

Lubricant Recommendations for Customer Vehicles

Mosler does not specifically recommend the exclusive usage of special slippery synthetic engine-, transmission- or differential gear oils to the ultimate vehicle owner (see owner manuals).

Mosler will recommend the current list of General Motors factory-approved lubricants.

Lubricants used on Test Vehicles

Lubricants and fluids (engine, transmission, differential gear box) used in test vehicles are also used for factory fill in production vehicles:

Engine Oil: MOBIL 15 W30

STATEMENT

Mosler states that to the best of its knowledge, the test facility and the equipment are in compliance with the applicable regulations of the Federal Register.

STATEMENT

Mosler states that all emission testing, mileage accumulation and dynamometer horsepower determination are performed according to applicable regulations and recommendations.

Vehicle Model: RAPTOR

Maintenance Intervals

1 – every 5,000 miles
2 – every 50,000 miles
3 – every 100,000 miles

	*** Lubrication, General Maintenance of Engine** **# Emission Control System Maintenance**	**Engine Code**				
		M1				
		1	2	3	4	5
	* Change engine oil and filter [1)]	X				
	* Replace fuel filter		O			
	# Replace air filter element		X			
	* Check condition of V-belts, replace if necessary	O				
	# Replace spark plugs			X		
	* Lubricate engine control link-age, check for easy motion and wear	X				

X Scheduled maintenance.

O Recommended maintenance. Omission does not affect emission warranty and recall liability. Job not performed on certification vehicles.

1) At least once every two years.

Emission Control Label

50 STATES LABEL

VEHICLE EMISSION CONTROL INFORMATION. Displacement: 7.0 L Engine family CC3XV07.0086. Exhaust emission control system: SFI/2TWC/HO2S(2). Evap Engine family CC3XR0133880. Adjustment specifications, NO ADJUSTMENTS NEEDED. SEE SERVICE MANUAL AND MAINTENANCE SCHEDULE FOR MORE INFORMATION.

THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 REGULATIONS AND CALIFORNIA REGULATIONS APPLICABLE TO 2012 MODEL-YEAR NEW PASSENGER CARS.

OBDII CERTIFIED

Mosler Automotive
2391 Old Dixie Highway, Riviera Beach, FL 33404 (561) 493-7500

DURABILITY: The labels are designed to withstand for the vehicle's total expected life; typical vehicle environmental conditions in the area where the label is attached.

LOCATION : In engine compartment; on interior wall of engine bay.

Engine Family CC3XV07.0086

Camshaft and Drive System
A billet steel 1-piece camshaft is supported by 5 bearings pressed into the engine block. The camshaft has a machined reluctor ring on its face. The camshaft timing sprocket is mounted to the front of the camshaft and is driven by the crankshaft sprocket through the camshaft timing chain. The crankshaft sprocket is splined and drives the oil pump driven gear. A retaining plate mounted to the front of the engine block maintains camshaft location.

Crankshaft
The crankshaft is forged steel. The crankshaft is supported by 5 crankshaft bearings. The bearings are retained by crankshaft bearing caps which are machined with the engine block for the proper alignment and clearance. The crankshaft journals are undercut and rolled. The center main journal is the thrust journal. A crankshaft position reluctor ring is mounted at the rear of the crankshaft. The reluctor ring is not serviceable separately.

Cylinder Heads
The cylinder head assemblies are CNC-ported cast aluminum and have pressed in place powdered metal valve guides and valve seats. Passages for the vapor ventilation system are at the front of each valve cover. There are no exhaust gas passages within the cylinder head. Valve rocker arm covers are retained to the cylinder head by 4 center mounted rocker arm cover bolts.

Engine Block
The engine block is a cam-in-block deep skirt 90 degree V configuration with 5 crankshaft bearing caps. The engine block is aluminum with pressed in place iron cylinder bore liners. The 5 crankshaft bearing caps each have 4 vertical M10 and 2 horizontal M8 mounting bolts. The camshaft is supported by 5 camshaft bearings pressed into the block.

Exhaust Manifolds
The exhaust manifolds are a hydroformed multi-piece tubular designed with bolt-on heat shielding. The exhaust manifolds direct exhaust gasses from the combustion chambers to the exhaust system.

Intake Manifold
The IAFM or integrated air fuel module is a one piece composite design that incorporates metal threaded inserts for mounting the fuel rail and throttle body. The intake manifold is sealed to the cylinder heads by eight separate nonreusable silicone sealing gaskets which press into the grooves of the intake housing. The drive by wire throttle body assembly bolts to the front of the intake manifold. The throttle body is sealed to the intake manifold by a one piece push in place silicone gasket. The fuel rail assembly with eight separate fuel injectors is retained to the intake by four bolts. The injectors are seated in their individual manifold bores with O-ring seals to provide sealing. A fuel rail stop bracket is retained at the rear of the left fuel rail by the intake manifold mounting bolts. A snap fit manifold absolute pressure (MAP) sensor housing is mounted at the rear of the manifold and sealed by an O-ring seal. The MAP sensor is installed and retained to the MAP sensor housing. There are no coolant passages within the intake manifold.

Oil Pan
The oil pan is a low-profile dry sump design that utilizes a separate 8-quart oil reservoir.

Piston and Connecting Rod Assemblies
The pistons are cast aluminum. The pistons use two compression rings and one oil control ring assembly. The piston is a low friction, lightweight design with a flat top and barrel shaped skirt. The piston pins are chromium steel. They have a floating fit in the piston and are retained by a press fit in the connecting rod. The connecting rods are Titanium. The connecting rods are fractured at the connecting rod journal and then machined for clearance.

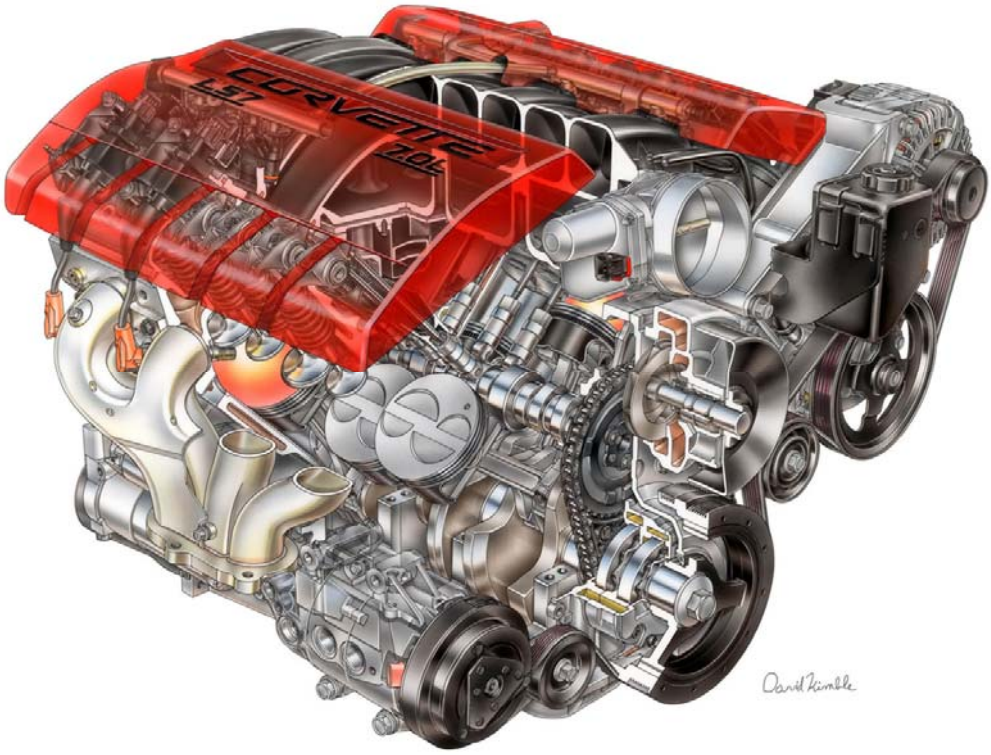
Valve Rocker Arm Cover Assemblies

The valve rocker arm covers are cast aluminum and use a pre-molded silicone gasket for sealing. Mounted to each rocker cover is an ignition coil and bracket assembly. Incorporated into the covers are the oil fill tube, the positive crankcase ventilation (PCV) system passages, and the engine fresh air passages.

Valve Train

Motion is transmitted from the camshaft through the hydraulic roller valve lifters and tubular pushrods to the roller type rocker arms. The valve lifter guides position and retain the valve lifters. The valve rocker arms for each bank of cylinders are mounted on pedestals or pivot supports. Each rocker arm is retained on the pivot support and cylinder head by a bolt. Valve lash is net build. For the LS7 application, both the intake and exhaust valves are of a hollow stem design. The intake valves are titanium. The exhaust valve stems are sodium filled for improved cooling.

Engine Cutaway



Ceramic-Coated Turbochargers Installation

Emission Control System Overview

Engine Family	Emission Control System	Variable Valve timing (VVT)	Variable Induction System (VIS)
CC3XV07.0086	FI/TWC/HO2S	NO	NO

Fuel Tank Fill Pipe and Hose
The fuel tank fill pipe is positioned at the rear of the vehicle on the left side. A built in restrictor in the fuel tank fill pipe prevents refueling with leaded fuel. The fuel tank fill pipe connects to the fuel tank with a rubber hose.

Fuel Filler Cap
If a fuel tank filler cap requires replacement, use only a fuel tank filler cap with the same features. Failure to use the correct fuel tank filler cap can result in a serious malfunction of the fuel and EVAP system. The fuel tank filler pipe has a tethered fuel tank filler cap. The fuel tank filler cap requires a quarter of a turn in order to be removed. A torque limiting device prevents the cap from being over tightened.

Fuel Sender Assembly
A fuel sender assembly is located inside each fuel tank. The fuel sender assembly attaches to the lower side of each fuel tank. The fuel sender assembly consists of the following major components:

- The fuel level sensor
- The fuel pump and reservoir assembly
- The fuel pump strainer

Fuel Level Sensor
The fuel level sensor consists of a float, a wire float arm, and a variable resistor. The position of the float arm indicates the fuel level. The fuel level sensor contains a variable resistor, which changes the resistance corresponding to the amount of fuel in the fuel tanks. The PCM uses inputs from both fuel level sensors in order to calculate the total fuel remaining in both fuel tanks. This information is sent via a class 2 message to the instrument panel cluster (IPC) to be displayed on the fuel gage.

Fuel Pump
An electric high-pressure fuel pump attaches to the fuel sender assembly inside the fuel tank. The fuel pump supplies fuel to the fuel rail assembly at a specified flow and pressure. Excess fuel from the fuel pressure regulator, a part of the fuel filter, returns to the fuel tank through the return pipe. The fuel pump delivers a constant flow of fuel to the engine even during low fuel conditions and aggressive vehicle maneuvers. The PCM controls the electric fuel pump operation through a fuel pump relay.

Fuel Strainer
The fuel strainer is made of woven plastic. The functions of the fuel strainer are to filter the contaminants and to wick the fuel. The fuel strainer attaches to the bottom of the fuel pump. The fuel strainer normally requires no maintenance. Fuel stoppage at this point indicates that the fuel tanks contain an abnormal amount of sediment or water. If the fuel strainer is plugged, refer to Fuel System Cleaning.

Fuel Filter/Fuel Pressure Regulator

The fuel filter/fuel pressure regulator is installed in the fuel feed pipe ahead of the fuel injection system. The paper filter element of the fuel filter traps particles in the fuel that may damage the fuel injection system. The fuel filter/fuel pressure regulator housing is made to withstand maximum fuel system pressure, exposure to fuel additives, and changes in temperature. There is no service interval for fuel filter replacement. Replace a restricted fuel filter.

The fuel pressure regulator is a diaphragm relief valve. The diaphragm has fuel pressure on one side and regulator spring pressure on the other side. A software bias compensates the injector on-time because the fuel pressure regulator is not referenced to the manifold vacuum. The fuel pressure regulator keeps fuel available to the injectors at a regulated pressure.

Fuel Feed and Return Pipes

The fuel feed pipe carries the fuel from the fuel tank to the fuel rail assembly. The fuel return pipe carries the fuel from the fuel filter/fuel pressure regulator assembly back to the fuel tank. All of the components are General Motors parts.

Nylon Fuel Pipes

Nylon pipes are constructed to withstand maximum fuel system pressure, exposure to fuel additives, and changes in temperature. There are 2 sizes of nylon fuel pipes used. A 9.53 mm (3/8 in) ID pipe is used for the fuel feed pipe and the auxiliary fuel feed pipe. Heat resistant rubber hose and/or corrugated plastic conduit protect the sections of the pipes that are exposed to chafing, high temperature or vibration.

Nylon fuel pipes are somewhat flexible and can be formed around gradual turns under the vehicle. However, if nylon fuel pipes are forced into sharp bends, the pipes will kink and restrict the fuel flow. Also, once exposed to the fuel, nylon pipes may become stiffer and are more likely to kink if bent too far. Take special care when working on a vehicle with nylon fuel pipes.

Quick-Connect Fittings

Quick-connect fittings provide a simplified means of installing and connecting fuel system components. The fittings consist of a unique female connector and a compatible male pipe end. O-rings located inside the female connector provide the fuel seal. Integral locking tabs located inside the female connector hold the fittings together.

Fuel Rail Assembly

The fuel rail assembly attaches to the engine intake manifold. The fuel rail assembly performs the following functions:

- Positions the injectors (1) in the intake manifold
- Distributes the fuel evenly to the injectors
- Integrates the fuel pulse dampener (2) into the fuel metering system

Fuel Injectors

The fuel injector assembly is a solenoid device, controlled by the PCM, that meters pressurized fuel to a single engine cylinder. The PCM energizes the injector solenoid to open a normally closed ball valve. This allows the fuel to flow into the top of the injector, past the ball valve, and through a director plate at the injector outlet. The director plate has machined holes that control the fuel flow, generating a spray of finely-atomized fuel at the injector tip. Fuel from the injector tip is directed at the intake valve, causing the fuel to become further atomized and vaporized before entering the combustion chamber. This fine atomization improves fuel economy and emissions.

Fuel Metering Modes of Operation

The PCM monitors voltages from several sensors in order to determine how much fuel to give the engine. The PCM controls the amount of fuel delivered to the engine by changing the fuel injector pulse width. The fuel is delivered under one of several modes.

Ignition System
The electronic ignition (EI) system is responsible for producing and controlling a high energy secondary spark. This spark is used to ignite the compressed air/fuel mixture at precisely the correct time. This provides optimal performance, fuel economy, and control of exhaust emissions. This ignition system consists of a separate ignition coil connected to each spark plug by a short secondary wire. The driver modules within each coil assembly are commanded ON/OFF by the powertrain control module (PCM). The PCM primarily uses engine speed and position information from the crankshaft and camshaft position (CMP) sensors to control the sequence, dwell, and timing of the spark. The EI system consists of the following components:

Crankshaft Position (CKP) Sensor
The crankshaft position (CKP) sensor is a three wire sensor based on the magneto resistive principle. A magneto resistive sensor uses two magnetic pickups between a permanent magnet. As an element such as a reluctor wheel passes the magnets the resulting change in the magnetic field is used by the sensor electronics to produce a digital output pulse. The PCM supplies a 12-volt, low reference, and signal circuit to the CKP sensor. The sensor returns a digital ON/OFF pulse 58 times per crankshaft revolution.

Crankshaft Reluctor Wheel
The 58-tooth crankshaft reluctor wheel is mounted on the rear of the crankshaft.

Camshaft Position (CMP) Sensor
The CMP sensor is also a magneto resistive sensor, with the same type of circuits as the CKP sensor. The CMP sensor signal is a digital ON/OFF pulse, output once per revolution of the camshaft. The CMP sensor information is used by the PCM to determine the position of the valve train relative to the CKP.

Camshaft Reluctor Wheel
The camshaft reluctor wheel is machined onto the camshaft sprocket.

Ignition Coils
Each ignition coil has an ignition 1 feed and a ground. The PCM supplies a low reference and an ignition control (IC) circuit. Each ignition coil contains a solid state driver module as the primary element. The PCM signals the coil driver to initiate a firing event by applying the IC circuit voltage for the appropriate time, or dwell. When the voltage is removed the coil fires the spark plug. The coils are current limited to prevent overloading if the IC current is held high too long.

Powertrain Control Module (PCM)
The PCM controls all ignition system functions, and constantly corrects the basic spark timing. The PCM monitors information from various sensor inputs that include the following:

- The throttle position (TP) sensor
- The engine coolant temperature (ECT) sensor
- The mass airflow (MAF) sensor
- The intake air temperature (IAT) sensor
- The vehicle speed sensor (VSS)
- The transmission gear position or range information sensors
- The engine knock sensors (KS)

Crankcase Ventilation System

The crankcase is ventilated under idle and low part load. Vapors travel through a combination carrier along a ventilation pipe via a restrictor in the manifold of the vent pipe to the intake manifold.

Entrained engine oil is filtered out in the combination carrier and passed along an oil drain pipe into the oil sump.

The vacuum, which is produced as a result in the crankcase draws in fresh air from the intake air pipe through the air admission and ventilation connections.

Modes of Operation

There is one normal mode of operation, with the spark under PCM control. If the CKP pulses are lost the engine will not run. The loss of a CMP signal may result in a longer crank time since the PCM cannot determine which stroke the pistons are on. Diagnostic trouble codes are available to accurately diagnose the ignition system with a scan tool.

Starting Mode

When the ignition is first turned ON, the PCM energizes the fuel pump relay for 3 seconds. This allows the fuel pump to build pressure in the fuel system. The PCM calculates the air/fuel ratio based on inputs from the engine coolant temperature (ECT), mass air flow (MAF, manifold absolute pressure (MAP), and throttle position (TP) sensors. The system stays in starting mode until the engine speed reaches a predetermined RPM.

Clear Flood Mode

If the engine floods, clear the engine by pressing the accelerator pedal down to the floor and then crank the engine. When the TP sensor is at wide open throttle (WOT), the PCM reduces the fuel injector pulse width in order to increase the air to fuel ratio. The PCM holds this injector rate as long as the throttle stays wide open and the engine speed is below a predetermined RPM. If the throttle is not held wide open, the PCM returns to the starting mode.

Run Mode

The run mode has 2 conditions called Open Loop and Closed Loop. When the engine is first started and the engine speed is above a predetermined RPM, the system begins Open Loop operation. The PCM ignores the signal from the heated oxygen sensors (HO2S). The PCM calculates the air/fuel ratio based on inputs from the ECT, MAF, and TP sensors. The system stays in Open Loop until meeting the following conditions:

- Both front HO2S have varying voltage output, showing that both HO2S are hot enough to operate properly.
- The ECT sensor is above a specified temperature.
- A specific amount of time has elapsed after starting the engine.

Specific values for the above conditions exist for each different engine, and are stored in the electrically erasable programmable read only memory (EEPROM). The system begins Closed Loop operation after reaching these values. In Closed Loop, the PCM calculates the air/fuel ratio, injector on-time, based upon the signal from various sensors, but mainly from the HO2S. This allows the air/fuel ratio to stay very close to 14.7:1.

Acceleration Mode

When the driver pushes on the accelerator pedal, the air flow into the cylinders increases rapidly. To prevent possible hesitation, the PCM increases the pulse width to the injectors to provide extra fuel during acceleration. This is also known as power enrichment. The PCM determines the amount of fuel required based upon the TP, the ECT, the MAF, and the engine speed.

Deceleration Mode

When the driver releases the accelerator pedal, the air flow into the engine is reduced. The PCM monitors the corresponding changes in the TP and the MAF. The PCM shuts OFF fuel completely if the deceleration is very rapid, or for long periods, such as long, closed-throttle coast-down. The fuel shuts OFF in order to prevent damage to the catalytic converters.

Battery Voltage Correction Mode

When the battery voltage is low, the PCM compensates for the weak spark delivered by the ignition system in the following ways:

- Increasing the amount of fuel delivered
- Increasing the idle RPM
- Increasing the ignition dwell time

Fuel Cutoff Mode

The PCM cuts OFF fuel from the fuel injectors when the following conditions are met in order to protect the powertrain from damage and improve driveability:

- The ignition is OFF. This prevents engine run-on.
- The ignition is ON but there is no ignition reference signal. This prevents flooding or backfiring.
- The engine speed is too high, above red line.
- The vehicle speed is too high, above rated tire speed.
- During an extended, high speed, closed throttle coast down. This reduces emissions and increases engine braking.

  During an extended deceleration, in order to prevent damage to the catalytic converters.

Engine Family CC3XV07.0086

Catalytic Converters

The catalytic converter is an emission control device added to the engine exhaust system in order to reduce hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (Nox) pollutants from the exhaust gas.

The catalytic converter is comprised of a ceramic monolith substrate, supported in insulation and housed within a sheet metal shell. The substrate is coated with 3 noble metals:

- Platinum (Pt)
- Palladium (Pd)
- Rhodium (Rh)

The catalyst in the converter is not serviceable.

The Raptor has dual catalytic converters sourced. The catalytic converters are the same parts on the 50-state Certified 2012 Chevrolet Corvette Z06. The catalytic converters are mounted in the same location relative to the engine and exhaust manifolds as on the 2012 Corvette Z06.

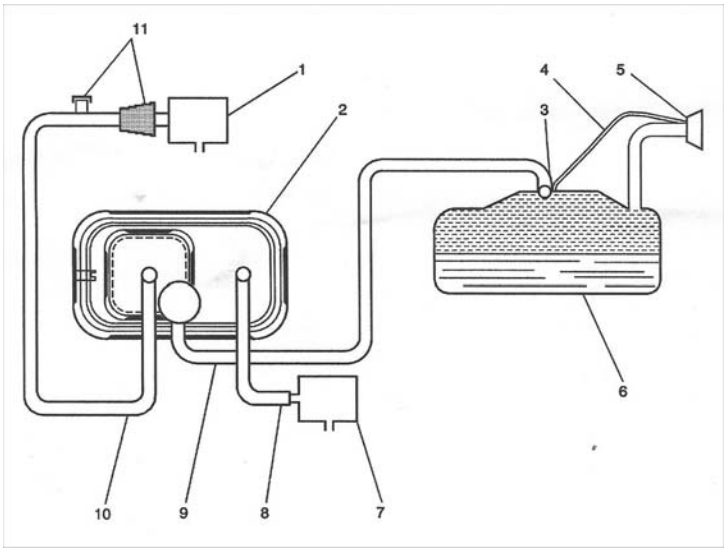
Engine Family CC3XV07.0086

Evaporative Emissions System
Evaporative/Refueling Family CC3XR0133880

On-Board Refueling Vapor Recovery System (ORVR)

The on-board refueling vapor recovery system (ORVR) is an on board vehicle system designed to recover fuel vapors during the vehicle refueling operation. The flow of liquid fuel down the fuel filler pipe provides a liquid seal, which prevents vapor from leaving the fuel filler pipe. An EVAP pipe transports the fuel vapor to the EVAP canister for use by the engine. Listed below are the ORVR system components with a brief description of their operation:

- The EVAP canister --the EVAP canister receives refueling vapor from the fuel system, stores the vapor and releases the vapor to the engine upon demand.
- The EVAP pipes --transports fuel vapor from the fuel tank to the EVAP canister.
- The fuel filler pipe --the pipe which carries fuel from the fuel nozzle to the fuel tank.
- The check valve --the check valve limits fuel "spit back" from the fuel tank during the refueling operation by allowing fuel flow only into the fuel tank. This check valve is located at the bottom of the fuel filler pipe.
- The modular fuel sender assembly --this assembly pumps fuel to the engine from the fuel tank.
- The fill limiter vent valve (FLVV) --this valve acts as a shut off valve. The FLVV is located on the top of the fuel tank. This valve is not serviced separately. The FLVV has the following functions:
    - Controls the fuel tank fill level by closing the primary vent from the fuel tank.
    - Prevents the fuel from exiting the fuel tank via the EVAP pipe to the canister.
    - Provides fuel-spillage protection in the event of a vehicle rollover by closing the vapor path from the fuel tank to the EVAP canister.



1. EVAP Canister Purge Valve.
2. EVAP Canister.
3. Fluid Level Vent Valve.
4. Vapor Recirculation tube.
5. Fuel Fill Neck and Fill Cap.
6. Feul Tank.
7. EVAP Canister Vent Valve.
8. Vent Hose/Pipe.
9. EVAP Vapor tube.
10. EVAP Purge tube.
11. EVAP Service Port or Service Access Connector.

Engine Family CC3XV07.0086

Combustion cycle	OTTO-cycle
Type of cooling	liquid-cooled
Method of aspiration	Natural
Cylinder arrangement	V - 8
Displacement (ltr)	7.0
Cylinder head design	Overhead valve/ 2 per cylinder
Power/rpm	638 hp @ 6200 rpm
Torque/rpm	553 ft-lbs @ 4800 rpm
Idle RPM (engine at operating temperature, TR 'N', accessories off)	850 rpm
Compression ratio	11.0:1
Air induction system	N/A
Air inlet temperature control system configuration and calibration	N/A
Air filter material	paper
Electronic control devices	integrated electronic ECM

Durability Data Vehicle

2012 MY Mosler durability data vehicle requirements for gasoline passenger cars.

For the evaporative system covered in this application Mosler is utilizing the Aged Components that have been aged per General Motors' process as also employed on the 2012 Corvette Z06. Mosler's engineering analysis states that the evaporative emissions systems will perform equalivalently well in the RAPTOR as they do in the Corvette.

Engine Family CC3XV07.0086

Emission Data Vehicle

2012 Production Raptor certification vehicle requirements for gasoline passenger car.

Selection number	EDV1
Displacement (ltr)	7.0
Engine code	GM07
Evap. emission code	CAN/SFI
Catalyst code	TWC
Emission control system	
Exhaust	SFI/TWC/H02S
Evap.	CAN
Model	Raptor
Transmission	M-6
Shift schedule	22,30,40,45,50
Equivalent test weight (lbs.)	2900
Dynamometer power	
Axle ratio	3.44:1
Tires	P265/35ZR19 –Front P335/30ZR20 – Rear
Model year	2012
Engine family	CC3XV07.0086
Evap. emission family	CC3XR0133880
Vehicle identification number	Raptor
Configuration number	1

Emission Test Vehicle Requirements

Notes:

A. Selected in accordance with 40 CFR 86.096-24 (b)(1)(i)
B. Selected in accordance with 40 CFR 86.096-24 (b)(1)(ii)
C. Selected in accordance with 40 CFR 86.096-24 (b)(1)(iii)
D. Selected in accordance with 40 CFR 86.096-24 (b)(1)(iv)
E. Selected in accordance with 40 CFR 86.096-24 (b)(1)(v)
F. Selected in accordance with 40 CFR 86.096-24 (b)(1)(vi)
G. Selected in accordance with 40 CFR 86.096-24 (b)(1)(vii)(B)
H. Selected in accordance with 40 CFR 86.096-24 (b)(1)(viii)(A)
I. Selected in accordance with 40 CFR 86.096-24 (c)(1)(i)
J. Data requirements for this vehicle are satisfied under authority of 40 CFR 86.096-24(f)
K. The full estimated weight of all optional items that are expected to be installed on more than 33 percent of vehicles in a car line within an engine-system combination shall be included in the curb weight computation for each vehicle in that car line with that option.
L. To be built with air conditioning

Emission Control System Parameters

Control systems:	SFI/2TWC/2HO2S(2)
• Electronic fuel injection	yes (SFI)
• Supercharging/turbocharging	no
• Charge air cooling	no
• Secondary air injection	no
• Exhaust gas recirculation	no
• Oxygen sensors	yes (2HO2S(2))
• Catalytic converters	yes (2TWC)
• Others	downstream oxygen sensor

System configuration	see 07.01
Crankcase emission control system	**closed loop**
Control valve configuration and calibration	N/A
Secondary Air Injection System	N/A
Exhaust gas recirculation	N/A
Other major exhaust emission control systems	O_2-sensor controlled FI-system
Parameters sensed	residual oxygen content of exhaust gas
Parameters controlled	air/fuel ratio

Emission control parts installed in this test vehicle were selected according to applicable criteria published by EPA in the guidelines for preparation of vehicles.

Engine Family CC3XV07.0086

Emission Control	:	SFI/TWC/HO2S
Engine Code	:	GM07
Model	:	Raptor
ETW (lbs)	:	2750
Road Load (hp)	:	10.9
Displacement	:	7.0 Ltr
Transmission	:	M-6
Axel Ratio	:	3.44:1
First EDV Selected	:	X

Starting and stopping the engine

Before Starting

- Apply parking brake
- Depress clutch

Starting

Turn starter key fully clockwise in the ignition lock. Do not depress accelerator pedal. After engine has started, release key.

If engine is already at its regular operating temperature:
If engine does not start after about 10 seconds, press accelerator pedal down and continue to turn the starter motor. Lift foot off the accelerator pedal after the engine has started.

Repeating the starting attempt

Starter key must be turned back to position 0 in ignition lock before a repeated attempt can be made.

Stopping the engine

With the car at a standstill, turn starter key back to position 0 in ignition lock.

Moving away:

- Depress clutch
- Select a forward gear.
- Release parking brake.
- Apply pressure on accelerator pedal while slowly releasing the clutch.

Engine Family CC3XV07.0086

	Part Number
MODULE ASM-PWRT CONT	GM12597121
SENSOR ASM-HTD OXY (POSN 2)	GM12581966
SENSOR ASM-HTD OXY (POSN 3)	GM12572772
VALVE ASM-PCV	GM12600252
ENGINE	
VALVE ASM-PCV	GM12600253
EXHAUST	
CATALYST	GM15263677 & GM15263678
EVAPORATIVE	
CANISTER ASM-EVAP EMIS	GM17113332
VALVE ASM-EVAP EMIS CNSTR	GM10293954

Emission Warranty Statement

MODEL YEAR 2012
FEDERAL EMISSIONS DEFECT WARRANTY

For detailed information concerning emission control system maintenance, please refer to your Service Manual In addition to the Emission Control System Warranty, there is an Emission Performance Warranty, which may be applicable to your vehicle if it is required to be tested in your State or locality under an EPA-approved emission Short Test This warranty is as follows:

We warrant that if (a) this **MOSLER Raptor** vehicle is maintained and operated in accordance with the written instructions for proper maintenance and use in the Owner's Manual and the Workshop Manual and (b) it fails to conform at any time during its useful1ife to the applicable emission standards as judged by an EPA-approved emission test and (c) the owner is required, as a result of the nonconformity, to take action of any kind in order to avoid imposition of a penalty or sanction (including the denial of the right to use this vehicle) under local, State or Federal law, then we will remedy the non-conformity at no cost to the owner.

The warranty Period under the Vehicle Emission Performance Warranty is 3 years or 50,000 miles (whichever comes first) beginning on the date the vehicle is delivered to the first retail purchaser, or if it is first used as a demonstrator or company vehicle, on the date it is first placed in such service, except for those parts designated by an (8) on the EMISSION/EMISSION PERFORMANCE WARRANTY PARTS LIST which are covered for 7 years or 70,000 miles, whichever comes first

Our obligation under the Emission Performance Warranty is to make at our expense all adjustment, repairs or replacements needed to make sure that the vehicle complies with applicable emission standards and will continue to comply throughout its useful life if proper maintenance is continued, and to ensure that it will operate safely.

The components covered for the 2 years/24,000 miles period of the Emission Performance Warranty are the same as those listed on the EMISSION/EMISSION PERFORMANCE WARRANTY PARTS LIST and designated by an (*). Our obligation also extends to adjusting, repairing or replacing any other component required to enable a component on this list to perform properly. You are entitled to make a claim under this Emission Performance Warranty if, within the Warranty Period, the vehicle fails an EPA-approved emission test required in your locality. Many states do not require the test, or confine it to vehicles registered in urban areas where air quality is affected by vehicle emissions. If the vehicle passes the test, then there is no need to invoke the Emission Performance warranty, which applies only where the owner is threatened with some penalty. Even if the test results are marginal and you are advised to have the vehicle checked before bringing it back for the next scheduled testing, no "penalty" has been applied and no claim may be asserted. It is only if you as owner are required to take action of any kind to avoid the penalty, or if you are not allowed to use the vehicle, that this Emission Performance Warranty comes into play.

OWNER RESPONSIBILITY

A Maintenance Schedule and instructions for proper maintenance and use of the vehicle may be found in the Owner's Manual. The Maintenance schedule specifies the time and/or mileage intervals at which maintenance work should be done. Claims under the Vehicle Emission Performance Warranty may be denied under some circumstances if proper maintenance work was not performed.

The Owners Manual contains a Maintenance Service Record that, if completed by a qualified person performing the service, may be acceptable as evidence that proper maintenance work was performed. While Mosler Automotive believes that the selling dealer is the one best equipped to perform this maintenance work, proper maintenance may be rendered by anyone who is in the business of regularly servicing this kind of vehicle. Also the vehicle owner may perform the maintenance, but in this case the owner may be required to show that proper parts were used, that the maintenance was done at the correct time or mileage intervals, and that the owner was otherwise able to perform the maintenance properly.

Of course, there is no objection to having maintenance performed more frequently than as provided in the Maintenance Schedule.

The vehicle has been designed to run on **PREMIUM UNLEADED GASOLINE ONLY** as specified in the Owner's Manual. Use of regular unleaded, leaded fuel or gasohol could adversely affect the vehicle's emission control system, possibly resulting in the failure of an emission test In such a case repairs could be the responsibility of the owner.

While we believe that it is preferable that maintenance work be done by a Mosler RAPTOR dealer, the validity of the Warranty does not depend on it **MAINTENANCE, REPLACEMENT OR REPAIR OF THE EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY AUTOMOTIVE REPAIR ESTABLISHMENT OR INDIVIDUAL USING ANY CERTIFIED PART**.

Furthermore, the validity of the Warranty does not depend on the use of any particular brand of replacement parts. However, the Warranty may be denied if an uncertified replacement part is used which is defective or not equivalent from an emission standpoint to the original part, and the uncertified part caused the vehicle to fail to meet applicable emission standards.

If the Workshop Manual requires a part to be replaced only if found to be operating below specification, the warranty may be denied if the owner did not replace the part before the vehicle failed the emission short test In such a case, the warranty will be denied only if failure to replace the part impaired another component relevant to the vehicle's inability to pass the emission short test

WHAT THIS WARRANTY DOES NOT COVER

- Diagnosis and inspection charges that do not result in any warranty eligible services being performed.

- Repairs, adjustments or service necessary due to abuse, tampering, neglect, misuse, fire, alteration, overloading, negligence, accident, improper maintenance or racing.

- Use of an uncertified part that is either defective or not equivalent, from an emission standpoint, to the original part where use of the uncertified part caused the vehicle to fail to meet applicable emission standards.

- Replacement of any emission parts due to repairs performed improperly by the owner or an automobile servicer other than an authorized Mosler Raptor servicer, in a manner not in compliance with the Workshop Manual.

- Replacement of any emission parts due to improper installation of a component or adjustment of a component substantially outside manufacturer specifications.

- Damages caused to any of the emission control devices by the use of improper fuel.

- Loss of time, loss of use of the automobile, inconvenience, consequential damage or incidental expenses. State law may not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

*Parts replaced as part of scheduled maintenance.

- Any emission part that has been modified or disconnected or any other part whose failure is caused by such modification or disconnection.

- Extreme conditions; such as when an automobile is not operated for extended periods of time or is operated under unusual driving conditions such as those requiring excessive starts and Stops, desert or cold-climate conditions or commercial service, unless the required extreme conditions maintenance is performed.

- Damage resulting from accident, acts of nature or other events beyond the control of Mosler Automotive.

- Components of any automobile on which the mileage cannot readily be determined.

WARRANTY ELIGIBILITY

A warranty claim under the Emission Performance Warranty may be submitted by advising us by telephone or in writing that you have a problem with the Emission Performance of your vehicle so that we may advise you of me nearest Mosler Raptor dealer, or any facility authorized by us to perform such work or service. If your Warranty claim is accepted, it will be our obligation to make all adjustments, repairs or replacement needed to assure (a) that the vehicle complies with EPA emission standards, and (b) it will continue to comply and operate safely throughout the Warranty period (provided your vehicle is properly maintained and operated). This will be done at our expense if the repairs are performed by your authorized Mosler Raptor dealer or by any facility authorized by us to perform such work or service.

Most dealers will be able to inform you promptly whether a claim under the Emission Performance Warranty is covered. If your dealer informs you that the claim is not covered, the claim will be sent to us for a final determination. We must give you a final decision within 30 days of your presenting your vehicle for repair, or within the time period set by local, State or Federal Law for you to have your vehicle repaired without incurring further penalties or sanctions, whichever period is the shorter. This time period may be extended, however, if you request a delay or if an event occurs which is not attributable to us or to the authorized repair facility. If we agree that me claim is not a valid one, we will give you a written explanation of the reasons why it is being denied However, if you do not receive a final determination during the requisite time period, and the failure is not attributable to you or to even~ which are beyond our control or the control of the repair facility, we will be responsible for repairing your vehicle's emission system free of charge. Similarly, if the authorized repair facility is unable (for reasons not attributable to you or even beyond the control of the facility and us) to repair your vehicle within the requisite time period, then you shall be entitled to have the Warranty remedy performed at our expense by any repair facility of your choosing.

WARRANTY COVERAGE FOR SUBSEQUENT OWNERS

Subsequent owners of this vehicle are eligible for unused Emission Performance Warranty coverage.

FOR FURTHER INFORMATION ABOUT THE VEHICLE EMISSION WARRANTIES

You may obtain further information concerning the Vehicle Emission Warranties by contacting our Customer Service Department at the following address:

MOSLER AUTOMOTIVE
2391 OLD DIXIE HIGHWAY
Riviera Beach, FL 33404

You may also obtain further information concerning the emission performance warranty and may report violations of the terms of this Warranty by contacting the Director, Field Operation and Support Division (EN-397), Environmental Protection Agency, 401 M Street, S. W., Washington D.C. 20460.

EMISSION / EMISSION PERFORMANCE WARRANTY PARTS LIST

I. Air/Fuel Metering System
- ❖ Feedback Control System & Sensors
- ❖ Altitude Compensation System
- ❖ Deceleration Controls

II. Ignition Spark Advance/Retard System
- ❖ Distributor and Internal Parts
- ❖ Distributor Vacuum Advance Unit
- ❖ Ignition Coil and Control Module
- ❖ Electronic Spark Controls
- ❖ Valves & Switches Sensing Vacuum & timing used to control spark advance/retard
- ❖ Spark plugs and Ignition Wires

III. Fuel Evaporative System
- ❖ Vapor Storage Canister & Filter

IV. Positive Crankcase Ventilation (PCV) System
- ❖ PC V Valve

V. Catalyst System

(8) Catalytic Converters
- ❖ Catalyst Material & Internal Structure
- ❖ Oxygen Sensors
- ❖ Fuel Filler Neck Restrictor

VI. Electronic Engine Controls
- ❖ Engine Parameter Sensors and Controls

(8) Electronic Control Unit

VII. Miscellaneous Items Used in Above Systems
- ❖ Hoses, clamps, brackets, pipes, gaskets, belts, pulleys, fitting seals & connectors

- ❖ Performance warranty items covered to 2/24

(8) Performance warranty items covered to 7/70

2012 MODEL YEAR VEHICLE EMISSION CONTROL SYSTEM PERFORMANCE WARRANTY FEDERAL

The Emission Control System Warranty for your vehicle is as follows:

We warrant that this **MOSLER Raptor** vehicle was designed, built and equipped so as to conform at the time of sale with all U.S. emission standards applicable at the time of manufacture and it is free from defects in materials and workmanship which would cause it not to meet those standards during the Emission Control System Warranty period. If the failure of any part covered by this Emission Control System Warranty is not the result of lack of proper maintenance or of misuse of the vehicle, it will be repaired, replaced or adjusted without charge during the Warranty Period.

The Warranty Period under this Emission Control System Warranty is 2 years or 24,000 miles (whichever comes first) beginning on the date the vehicle is delivered to the first retail purchaser, or if it is first used as a demonstrator or a company vehicle, on the date it is first placed in such service, except for those parts designated on the EMISSION/EMISSION PERFORMANCE WARRANTY PARTS LIST by an (10) which are covered for 10 years or 100,000 miles, whichever comes first

THIS WARRANTY DOES NOT COVER

- Service of wear items (such as spark plugs, vapor storage canister, filters, non-emission-related hoses, belts, fluid & lubricant) replaced during scheduled maintenance.
- Maintenance services such as tune-ups, fuel system cleaning or ignition timing.
- Failures resulting from misuse of the vehicle, negligence, modifications, accident, fire or other casualties, failure to use **PREMIUM** unleaded gasoline in a vehicle equipped with catalytic converter or use of vehicle in competitive events.
- Damage or failure caused solely by lack of proper maintenance specified in the maintenance schedule.
- Consequential damage or incidental expenses including, but not limited to, inconveniences, loss of time or loss of use of the vehicle. Some States do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you.
- Any vehicle on which the mileage cannot be readily determined.

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

Your Warranty Rights and Obligations

Mosler Automotive is pleased to explain the emission control system on your 2012 **MOSLER Raptor**. In California, new motor vehicles must be designed, built and equipped to meet the State's stringent anti-smog standards. Company must warrant the emission control system on your vehicle for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your vehicle.

Your emission control system includes parts such as the fuel injection system engine computer, the ignition system, and catalytic converter. Also included may be hoses, connectors and other emission-related assemblies.

Where a warrantable condition exists, Mosler Automotive will repair your vehicle at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

For 3 years or 50,000 miles (whichever occurs first):

1) If your vehicle fails a California Smog Check inspection, all necessary repairs and adjustments will be made by Mosler Automotive to ensure that your vehicle passes the inspection. **This is your emission control system PERFORMANCE WARRANTY.**

2) If any emission-related part on your vehicle is defective, the part will be repaired or replaced by Mosler Automotive. **This is your 3/50 emission control system DEFECTS WARRANTY.**

For 7 years or 70,000 miles (whichever occurs first):

1) If an emission-re1ated part listed in this warranty booklet specially noted with coverage for 7 years or 70,000 miles is defective, the part will be repaired or replaced by Mosler Automotive. **This is your 7/70 emission control system DEFECTS WARRANTY.**

Note: Please see following pages for more information on these warranties.

OWNER'S WARRANTY RESPONSIBILITIES:

As the vehicle owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Mosler Automotive recommends that you retain all receipts covering maintenance on your car, but Mosler Automotive cannot deny warranty solely for the lack of records or receipts or for your failure to ensure the performance of all scheduled maintenance.

You are responsible for presenting your vehicle to a designated repair facility as soon as you are aware that a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

As the vehicle owner, you should also be aware that Company may deny you warranty coverage if your vehicle or a part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.

If you have any questions regarding your warranty rights and responsibilities, you should contact:

Mosler Automotive
2391 Old Dixie Highway
Riviera beach, FL 33404
(561)842-2492

California Air Resources Board
9528 Telstar Avenue
El Monte, CA 91731.

These California Emission Control Warranty rights and obligations are further explained in the following pages.

CALIFORNIA EMISSION CONTROL SYSTEM LIMITED WARRANTY

TIME AND MILEAGE PERIOD

This warranty applies only to 2012 Model Year **MOSLER Raptor** motor vehicles certified for sale by Mosler Automotive and registered in California.

This warranty begins on the date the car is delivered to the first retail purchaser or on the date the car is first used as a demonstrator, lease or company car, whichever comes first and continues for the time and mileage intervals detailed under Mosler Automotive Emissions Warranty.

WARRANTY COVERAGE

Mosler Automotive warrants to the owner of any 2012 **MOSLER Raptor** that the vehicle was designed, manufactured, and equipped to conform with all California emission standards applicable at the time of manufacture for a period of 3 years or 50,000 miles, whichever occurs first, and that it is free from defects in material and workmanship which would cause it to fail to conform with all applicable California requirements for a period of 3 years or 50,000 miles, whichever occurs first, as follows:

PERFORMANCE WARRANTY

a) For 3 years or 50,000 miles, whichever occurs first, Mosler Automotive will make all adjustments, repairs and replacements necessary to ensure that the vehicle will pass the California Smog Check test and will continue to be in compliance for the remainder of this warranty period, provided that the vehicle has been properly maintained and operated.

3/50 DEFECT WARRANTY

b) For 3 years or 50,000 miles, whichever occurs first, Mosler Automotive will repair or replace any defective part which affects emissions (some of which are listed under Emission Control System Parts List for California).

7/70 DEFECT WARRANTY

c) After 3 years or 50,000 miles, but less than 7 years or 70,000 miles, whichever occurs first, Mosler Automotive will replace only those parts identified with a (7) under the Emission Control System Parts List for California, and any other parts affected by the failure of the warranted part.

IMPORTANT: If, after 3 years and 50,000 miles but before 7 years and 70,000 miles, a Smog Check failure is caused by any part listed under the Emission Control System Parts List for California that is identified with a (7), Mosler Automotive will repair/replace that part free of charge for parts, labor and diagnosis expense if the work is performed at a repair facility designated by Mosler Automotive. If you elect to have the work performed anywhere else you will be responsible for the entire cost, and the upper cost limit of the California Health and Safety Code Section 44017 will not apply (unless an emergency situation as described in "How to Get Warranty Service" applies).

HOW TO GET WARRANTY SERVICE:

To obtain service under this warranty, upon failure of a Smog Check test, an EPA approved short test, or upon discovery of a defect, the owner should notify Mosler Automotive and send a copy of the Smog Check Test Failure to Mosler Automotive, 2391 Old Dixie Highway, Riviera beach, FL 33404 or call 1-(561) 842-2492, Fax: (561) 845-3237. Company will then designate a repair facility to attend to repairs during normal business hours. In most cases, this will be an authorized Mosler RAPTOR dealer in your area. The dealer will, without charge for parts or labor (including diagnosis), either repair or replace the defective part using new, or authorized Mosler Automotive RAPTOR remanufactured parts. The decision to repair or replace said parts is solely the prerogative of Mosler Automotive. The owner should bring a copy of the Smog Check Test report or printout to the authorized repair facility when filing a claim. Within 30 days, this facility will either repair the vehicle under warranty or deny the claim. If the owner is not notified within 30 days that the performance warranty claim is not valid, then Mosler Automotive is required to repair the vehicle free of charge.

In all cases, up to 30 days must be allowed for a warranty repair to be completed after the car is received by the dealer or designated repair facility.

In an emergency, when a warranty station is not reasonably available, a warrantable part is unavailable within 30 days, or repair is not completed within 30 days, then repairs must be made at any available service establishment or by the owner using any replacement part. Mosler Automotive will reimburse the owner for such emergency repairs covered by this warranty. Reimbursement will not exceed Mosler Automotive's suggested retail price for parts, labor and diagnosis expense based on Mosler Automotive's recommended time allowance multiplied by an hourly labor rate that is appropriate for the area in which the repair was made. Any replaced parts and paid invoices must be presented to Mosler Automotive as a condition of reimbursement

THIS WARRANTY DOES NOT COVER

This warranty does not cover any vehicle on which the vehicle identification number is altered or cannot be determined, or if the vehicle has been declared a total loss or sold for salvage.

Failures or malfunctions resulting from misuse, accidents, neglect, modification, alteration, tampering, disconnection, improper or inadequate maintenance, use of improper fuel or fuel with contaminants that the fuel filter is not designed to remove, (instructions for proper operations, maintenance, and fuelling are contained in the Owners Manual and Service Maintenance Schedules).

DISCLAIMER OF INCIDENTAL AND CONSEQUENTIAL DAMAGES & LIMITATIONS OF IMPLIED WARRANTIES

The performance of repairs and needed adjustments is the exclusive remedy under this written warranty or any implied warranty.

Mosler Automotive disclaims any responsibility for incidental or consequential damages such as loss of time or wages, inconvenience or use of the parts or vehicle in which the parts are installed, transportation, commercial or exemplary damages.

Any implied warranties, including the implied warranties of merchantability and fitness for a particular purpose are limited to the duration of this written warranty.

Mosler Automotive does not authorize any other entity or person to create for it any other liability, warranty or obligation in connection with these cars.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion of or limitation of incidental or consequential damages, therefore, the above limitations and exclusions may not apply to you.

YOUR RESPONSIBILITY FOR MAINTENANCE

It is the owner's responsibility to have the required maintenance performed in accordance with Mosler Automotive's instructions for proper care, use and maintenance contained in the Owner's Manual, and Service and Maintenance schedules. They are designed to keep your emission control systems functioning properly by maintaining your car's total operating performance.

Failure to perform the required maintenance on the car may affect the quality of your vehicle's emissions.

Where a part is scheduled for replacement as required maintenance, the part is warranted up to the first replacement point

Maintenance and repair of emission control devices should be performed using genuine Mosler Automotive RAPTOR parts, however, you may have such service or repairs performed at any service establishment using any replacement parts. Repairs covered under this warranty must be performed at an authorized repair facility, except as performed in an emergency situation as detailed under "How To Get Warranty Service."

The use of parts that are not equivalent in quality or design may impair the effectiveness of your vehicle's emission control system. The use of such parts will not in itself reduce the coverage under this warranty unless their use caused damage to warranted parts. Mosler Automotive assumes no responsibility under this warranty with regard to parts other than genuine Mosler Automotive MT 900 parts.

These emission warranties are required by California law, and are effective only to the extent required by law. To the extent the law is amended or suspended, these warranties are automatically altered in the same manner, without further notice.

For assistance in determining which parts are covered by this warranty, please contact Mosler Automotive, 2391 Old Dixie Highway, Riviera Beach, FL 33404, or write directly to the California Air Resources Board, 9528 Telstar Avenue, El Monte, CA 91731.

EMISSION CONTROL SYSTEM PARTS LIST
CALIFORNIA DEFECT WARRANTY *

Component Description	
Fuel Metering System & Electronic Engine Controls	
Feedback Control System	X
Feedback Control Sensors	X
Altitude Compensation System	X
Deceleration Controls	X
Engine Parameter Sensors and Controls	X
Fuel Injectors	X
Electronic Control Unit (ECM)	(7)
Fuel Rail	X
Oxygen Sensor	X
Exhaust System	
Catalytic Converter Assembly	(7)
Exhaust Manifold	X
Air Intake/Positive Crankcase Ventilation (PCV) System	
Oil Filler Cap Assembly	X
PCV Valve	X
Intake Manifold	X
Mass Air Flow Sensor	(7)
Ignition System	
Ignition Coils Assembly	(7)
Ignition Control Sensors	X
! Spark plugs & Ignition Wires	X
Fuel Evaporative Emission Control System	
Fuel Tank	(7)
Fuel Pump Assembly	(7)
Fuel Filler Neck & Restrictor	X
Fuel Filler Cap	X
Fuel Evaporative Canister & Filter	X
Purge Valve	X
Miscellaneous Items Used In The Above Systems	
Hoses, Clamps & Tubing	X
Fittings, Gaskets & Mounting Hardware	X

* Any part, which affects emissions, is covered, so other parts may be covered. Please contact Mosler Automotive, 2391 Old Dixie Highway, Riviera Beach, FL 33404 for further information.

! Covered until first required replacement interval.

SYNOPSIS OF SERVICE TRAINING PROGRAM

The Mosler Automotive RAPTOR service training program is acceptable as a qualification for servicing the emission control system on the Mosler Automotive RAPTOR.

Statement of Compliance
According to Section 206 (a) (3) of the Act

Mosler states that any element of design, system or emission control device installed on or incorporated in Mosler's new motor vehicle engines, for the purpose of complying with standards prescribed under section 202 of the Clean Air Act, will not, to the best of Mosler's information and belief, cause the emission into the ambient air of pollutants in the operation of its motor vehicles or motor vehicle engines which cause or contribute to an unreasonable risk to public health or welfare except as specifically permitted by the standards described under section 2020 of the Clean Air Act.

Mosler further states that any element of design, system, or emission control device or new motor vehicle engines, for the purpose of complying with standards prescribed under section 202 of the Clean Air Act, will not, to the best of Mosler's information and belief, cause or contribute to an unreasonable risk to the public safety.

The term pollutant means:

a) Diesel particulates
b) Nickel
c) MMT Combustion products
d) Ammonia
e) Sulfates
f) Hydrogen sulfide
g) Hydrogen cyanide
h) Ruthenium combustion products
i) Nitrosamines

Or any other pollutant that Mosler has identified which can reasonably be expected to be emitted from these vehicles.

Statement of Compliance

According to Requirements of 40 CFR 86.095-23 (d)

In accordance with 40 CFR 86.095-23 (d), we state that the vehicles for which certification is requested conform to the requirements in Paragraph 86.090-5 (b), and that the descriptions of tests performed to ascertain compliance with the general standards in Paragraph 86.090-5 (b) and the data derived from such tests, are available to the Administrator upon request.

Statement of Compliance

<u>According to Requirements of 40 CFR 86.095-23 (e)</u>

In accordance with 40 CFR 86.095-23 (e) (1), we state that the test vehicles with respect to which data are submitted to demonstrate compliance with the applicable standards of this subpart, are in all material respects as described in the manufacturer's application for certification, have been tested in accordance with the applicable test procedures utilizing the fuels and equipment described in the application for certification and that on the basis of such tests, the vehicles conform to the requirements in this part.

In accordance with 40 CFR 86.095-23 (e) (2), we state that the evap. emission deterioration factors for each evaporative emission family-evaporative emission control system combination and all test data that are derived from testing described under Paragraph 86.094-21 (b) (4) (i) designed and conducted in accordance with good engineering practice to assure that the vehicles covered by a certificate issued under Paragraph 86.096-30 will meet the evaporative emission standards in Paragraph 86.090-30 for the useful life of the vehicle.

Statement of Compliance with the

<u>Requirements of 40 CFR 86.094-22 and MAC 94-03</u>

In accordance with 40 CFR 86.094-22 and MAC 94-03 we herewith state that the emission control systems described in this Application for Certification do not have any adjustable parameters.

Furthermore, we state that the emission control modules and the Onboard Diagnostic modules are adequately sealed.

<u>Statement</u>

This application for certification identifies and describes those vehicles to be covered by the certificate(s) of conformity issued by EPA, and this application of certification covers only those new motor vehicles to be produced by Mosler that conform, in all material respects, to the design specifications (including tolerances) which are contained herein.

<u>Statement</u>

Production parameters and tolerances are identical to the design engineering limits, reported under sections 09 and 10 of this application.

High-Altitude Compliance

MOSLER states that on our engineering evaluation, the light duty vehicles described in this application comply with emission standards at High Altitudes.

Driveability and Performance Requirements

In accordance with "California Exhaust Emission Standards and Test Procedures for 1988 And Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles, 11.e." as amended February 25, 2011, MOSLER certifies that its production vehicles covered by the certificate for the applicable model year have driveability and performance characteristics which satisfy the manufacturer's specific driveability and performance requirements. This statement is based on driveability data and other evidence showing compliance with the manufacturer's in-house performance criteria, which, we believe, assures elimination of one of the major causes of widespread tampering with the emission control systems.

Statement of Compliance

The production vehicles which are subject to registration or sale in the state of California will be, in all material respects, substantially the same in construction as the test vehicles which are certified by the California Air Resources Board, and will meet all the applicable vehicle emission standards which are set forth by the California Air Resources Board in accordance with Section 43101 of the Health and Safety Code.